



The impact of extreme heat on morbidity in Milwaukee, Wisconsin

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Abstract:

Given predictions of increased intensity and frequency of heat waves, it is important to study the effect of high temperatures on human mortality and morbidity. Many studies focus on heat wave-related mortality; however, heat-related morbidity is often overlooked. The goals of this study are to examine the historical observed relationship between temperature and morbidity (illness), and explore the extent to which observed historical relationships could be used to generate future projections of morbidity under climate change. We collected meteorological, air pollution, and hospital admissions data in Milwaukee, Wisconsin, for the years 1989-2005, and employed a generalized additive model (GAM) to quantify the relationship between morbidity (as measured by hospital admissions) and high temperatures with adjustment for the effects of potential confounders. We also estimated temperature threshold values for different causes of hospital admissions and then quantified the associated percent increase of admissions per degree above the threshold. Finally, the future impact of higher temperatures on admissions for the years 2059-2075 was examined. Our results show that five causes of admission (endocrine, genitourinary, renal, accidental, and self-harm) and three age groups (15-64, 75-84, > 85 years) were affected by high temperatures. Future projections indicate a larger number of days above the current temperature threshold leading to an increase in admissions. Our results indicate that climate change may increase heat-related hospital admissions in the US urban mid-West and that health systems should include heat wave planning.

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Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES)

Special Report on Emissions Scenarios (SRES) Scenario: SRES A2

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors, Temperature

Air Pollution: Ozone, Particulate Matter

Climate Change and Human Health Literature Portal

Temperature: Extreme Heat, Fluctuations

Geographic Feature: 

resource focuses on specific type of geography

Urban

Geographic Location: 

resource focuses on specific location

United States

Health Impact: 

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Diabetes/Obesity, Injury, Mental Health/Stress, Neurological Effect, Respiratory Effect, Urologic Effect

Cardiovascular Effect: Heart Attack, Stroke, Other Cardiovascular Effect

Cardiovascular Disease (other): ischaemic heart disease

Mental Health Effect/Stress: Schizophrenia/Delusional Disorder, Substance-Induced Disorder

Respiratory Effect: Asthma, Chronic Obstructive Pulmonary Disease, Other Respiratory Effect

Respiratory Condition (other) : infectious respiratory disease

Mitigation/Adaptation: 

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: 

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Population of Concern: A focus of content

Population of Concern: 

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type: 

format or standard characteristic of resource

Research Article

Timescale: 

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content